

CLAIMS

1. A cooling equipment (1) for cooling a cooled material, especially for analysis, manipulating and/or processing cryosamples, with

- a cooling space (3) for receiving the cooled material,
- an inner wall (14) limiting the cooling space (3),
- an outer wall (15),
- an intermediate space between the outer wall (15) and the inner wall (14), as well as
- a cooling agent supply line (11, 13) for introducing a cooling agent,

characterized in that

the cooling agent supply line (11, 13) empties into the intermediate space between the inner wall (14) and the outer wall (15) and introduces the cooling agent into the intermediate space, the inner wall (14) being permeable for the cooling agent.

2. The cooling equipment (1) according to Claim 1, **characterized in that** a buffer material (16) is arranged in the intermediate space, which buffer material temporarily receives the cooling agent introduced into the intermediate space, and continuously transfers it through the inner wall (14) into the cooling space (3).

3. The cooling equipment (1) according to Claim 2, **characterized in that** the buffer material (16) is porous.

4. The cooling equipment (1) according to anyone of the preceding claims, **characterized in that** the inner wall (14) is substantially grid-shaped.

5. The cooling equipment (1) according to anyone of the preceding claims, **characterized in that** the inner wall
6. The cooling equipment (1) according to Claim 5, **characterized in that** the inner wall (14) consists substantially of metal.
7. The cooling equipment (1) according to anyone of the preceding claims, **characterized in that** the cooling space (3) is vat-shaped and has a circumferential edge on its upper side.
8. The cooling equipment (1) according to Claim 7, **characterized in that** the cooling agent supply line (11, 13) has a cooling agent distributor (13) that extends along the circumferential edge of the cooling space (3) and introduces the cooling agent in a distributed manner over its length into the intermediate space.
9. The cooling equipment (1) according to anyone of the preceding claims, **characterized in that** a heating element (21) is arranged in the cooling space (3).
10. The cooling equipment (1) according to Claim 9, **characterized in that** the heating element is arranged under a heating plate (21), the heating plate (21) having several perforations (22) that make a circulation of gas possible.
11. The cooling equipment (1) according to anyone of the preceding claims, **characterized in that** a removable protective bell (4) is placed on the cooling space (3).

12. The cooling equipment (1) according to Claim 11, **characterized in that** the protective bell (4) is at least partially transparent.

13. The cooling equipment (1) according to Claim 11 or 12, **characterized in that** the protective bell (4) has a sample lock (5).

14. The cooling equipment (1) according to anyone of the preceding claims, **characterized in that** a cold gas outlet (9) via which cooling agent and/or cold gas can escape from the cooling space (3) is arranged on the lower side of the protective bell (4) and/or on the upper side of the cooling space (3).

15. The cooling equipment (1) according to anyone of the preceding claims, **characterized by**

- a temperature sensor (19) arranged in the cooling space (3) for measuring the temperature in the cooling space (3),
- a controllable cooling agent valve (12) for adjusting the amount of cooling agent supplied,
- a temperature control device (18) for regulating the temperature in the cooling space (3), the temperature control device (18) being connected on the input side to the temperature sensor (19) and on the output side to the cooling agent valve (12).

16. The cooling equipment (1) according to Claim 15, **characterized in that** the temperature control device (18) is connected via an pulse generator (17) to the cooling agent valve (12), the pulse generator (17) alternately opening and closing the cooling agent valve (12).

17. The cooling equipment (1) according to Claim 15 or 16, **characterized in that** the temperature sensor (19) is arranged at a processing position in the cooling space (3).

18. The cooling equipment (1) according to Claims 15 to 17, **characterized in that** the temperature control device (18) and/or the pulse generator (17) adjust(s) the supply of cooling agent in such a manner that no cooling agent lake forms on the bottom of the cooling space (3).

19. The cooling equipment (1) according to anyone of the preceding claims, **characterized in that** the cooling agent is liquid nitrogen.

20. The use of a cooling equipment (1) according to anyone of the preceding claims for the investigation, processing and/or manipulation of a cryosample.